Heart Disease Risk Factors

By James M. Haig, N.C.

The statistics are sobering: over 50% of all Americans die of heart disease. Until relatively recently, this was believed to be a greater threat for men than women; however, recent data clearly show that heart attacks and strokes (two primary manifestations of cardiovascular disease) kill more women than the next seven causes of death combined, including breast cancer and *all* other forms of cancer. Clearly, any strategy for long-term health management has to seriously consider cardiovascular health. Happily, diet and lifestyle factors go a long way towards *significantly* reducing heart disease risk.

Many of the risk factors for heart disease are well-known: smoking, high blood pressure, diabetes (80% of diabetics die of blood vessel diseases), obesity, stress and a sedentary lifestyle. While elevated cholesterol levels have long been used as the benchmark for evaluating heart disease risk, the data actually show them to be a relatively weak marker (see accompanying article). In the last few years, several other markers have been shown to be much more reliable indicators. These include C-reactive protein, homocysteine, triglycerides and fasting insulin levels.

Though C-reactive protein (CRP) was discovered several decades ago, it remained largely unknown to most medical doctors and the public alike until a couple of years ago. Since then it has become the superstar of heart disease evaluation, and was recently featured in a major Time Magazine article (Feb. 23rd 2004, "The Fires Within"). CRP is produced by the liver in response to inflammation, and inflammation of the vasculature is more and more being seen as a primary symptom of heart disease. CRP is not, however, a *specific* marker for heart disease, but rather a non-specific marker for inflammation in the body. Inflammation itself turns out to be a common variable in almost *all* chronic or degenerative diseases, ranging from the annoying (such as arthritis, or common infectious diseases) to the tragic (Alzheimer's) to the life-threatening (heart disease, stroke, cancer). Though elevated CRP levels do not specifically indicate heart disease, they certainly suggest it as a strong possibility. Those with the highest levels of CRP have five times the risk of developing heart disease, and up to eight times the risk of suffering a heart attack or stroke. Please note, as indicated in the accompanying table, that the *normal* levels of CRP (and the other markers discussed here) shown on lab reports are generally set too high (as they are based on a statistical analysis of the population at large), and should *not* be confused with *optimal* levels.

Homocysteine is an amino acid metabolite that is normally produced in the body in small amounts during the synthesis of the important amino acid cysteine. Under certain circumstances (especially a lack of B-vitamins in the diet), homocysteine levels can become elevated, at which point they act as an irritant on the delicate lining of the blood vessels, contributing to the development of atherosclerosis, and increasing threefold the risk of a heart attack.

Triglycerides are a blood lipid (fat), related to but much more significant than cholesterol. Where the data connecting high cholesterol levels to heart disease are ambiguous, there is a straight cause-and- effect relationship between elevated triglycerides and cardiovascular disease, correlating strongly with an increased risk of heart attack or stroke. Interestingly, although triglycerides are themselves fats, elevated levels are primarily synthesized from excess blood glucose, meaning that a high intake of carbohydrates (especially sugar and refined starches) is the primary predisposing factor to high triglyceride levels. Elevated triglycerides are particularly dangerous if HDL cholesterol levels are too *low*. A study conducted by researchers from Harvard and Brigham and Women's Hospital found that those with the highest ratio of triglycerides to HDL (i.e. those with the *highest* triglycerides and the *lowest* HDL) had an astonishing sixteen times greater risk of heart attack.

Although not as widely recognized in the medical community as the other markers discussed here, insulin is also turning out to be a key player relative to heart disease. The conversion of excess blood glucose into potentially dangerous triglycerides, as discussed above, is mediated by insulin. A regulatory hormone with many important functions, insulin is secreted by the pancreas in response to glucose entering the bloodstream following the ingestion of carbohydrate foods (and, to a lesser extent, proteins). If too many sugars and starches are consumed over too long a period of time, the phenomenon of insulin resistance develops, wherein the insulin receptors on the cell surface becomes less and less effective at opening up to allow the glucose to be transported into the cell, ultimately resulting in elevated levels of both glucose and insulin. Insulin itself then acts as an irritant to the lining of the blood vessels, encouraging the overproduction of plaque and cholesterol as well as triglycerides, instructing the kidneys to retain salt and therefore raise blood pressure, and promoting the deposition of body fat — all key risk factors for heart disease.

Next time you get a physical, ask your doctor to check all these markers. In the meantime, eating for your Metabolic Type and, if necessary, taking targeted supplements, will, happily, help to minimize the chance of you becoming a statistic.

Heart Disease Risk Factors

Modified from *The Nutrition Solution: A Guide to Your Metabolic Type*

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Marker	**Normal Range**	**Optimal Range**
C-reactive protein	<10 mg/L	<1 mg/L

Homocysteine	<15 μmol/L	<7μmol/L
Triglycerides	<200 mg/dL	<100 mg/dL
Insulin (fasting)	<27 μIU/mL	<5μIU/mL
HDL cholesterol	>35 mg/dL	>50 mg/dL
Cholesterol:HDL	<4.5	<3.5

Key: < = equal to or less than; > = equal to or greater than

Cholesterol Revisited

By James M. Haig, N.C.

Ever since Ancel Keys published his famous Seven Countries Study in 1970, the assertion that high cholesterol causes heart disease has been the rallying cry of the medical establishment, and has become the best known medical hypothesis in history. The fact that Keys' study has since been shown to be seriously flawed, and that at least 50% of those who die from heart attacks have normal cholesterol levels, has done little to abate the furor, and thirty years later, the cholesterol theory remains the dominant heart disease paradigm. One cannot fail but to notice that the huge profits made by the drug companies' lucrative anti-cholesterol medications almost certainly factor in here.

In chapter 4 of *The Nutrition Solution: A Guide to Your Metabolic Type*, we discuss the cholesterol issue in some depth. Suffice it to say here that cholesterol plays many important roles in a healthy body, acting as a carrier molecule transporting *all* the fat-

soluble nutrients through our bloodstream (it is the supposedly "bad" LDL cholesterol that does this!), providing structural support to almost all of the cells in our body (it is especially concentrated in the brain and nervous system), providing insulation for our nerve fibers, and supplying the sole raw material for the synthesis of the immune enhancing vitamin D and *all* (yes, all!) of our sex and adrenal hormones. Furthermore, dietary cholesterol (found in animal products) does *not* raise serum cholesterol (a fact acknowledged by Keys himself, but conveniently forgotten by his followers), but excess carbohydrates (especially refined ones) do.

Although elevated cholesterol levels do indeed correlate with cardiovascular disease about half of the time, this correlation is far from a straight line equation, and is usually secondary to one of the other risk factors discussed in the previous article. However, there are certain situations in which cholesterol can be seen as an indicator of possible heart disease.

Of all the cholesterol numbers, the total cholesterol is the least useful. At least one study of elderly people has shown that relatively high levels of total cholesterol can be quite compatible with a long and healthy life, and in studies of centenarians, total cholesterol seems insignificant so long as HDL, triglycerides and insulin levels are normal. In fact, the most dangerous level of total cholesterol is almost never discussed, and that is *low* cholesterol (defined as <150 mg/dL), which is directly correlated with significantly higher levels of stroke, cancer, depression and suicide.

LDL cholesterol certainly can be dangerous under certain conditions, none of which are necessarily dependent on elevated levels (>130): if it is not properly balanced by HDL; if it oxidizes (or "goes rancid") in the body (usually caused by elevated levels of one of the other risk factors discussed here, or by dietary trans-fatty acids); or if there are too many small, sticky LDL particles (LDL-B) rather than the larger, fluffy LDL-A particles (which is often precipitated by elevated triglycerides). Unfortunately, normal cholesterol tests do not make this important distinction, though special VAP or expanded cholesterol tests do (please refer to the Resources in *The Nutrition Solution* for more information). So it is the *type* of LDL that seems to be most important, not the amount, regardless of drug company funded studies that keep trying to convince us to drive our LDL levels ever lower.

HDL ("good" cholesterol) certainly seems to be the most important cholesterol marker. It plays a housekeeping role, "sweeping" up residual LDL (left behind as it delivers those precious fat-soluble nutrients to the cells) and bringing them back to the liver to be excreted out of the body. With HDL, the *higher* the better, with >50 mg/dL offering the most protection. The ratio of total cholesterol to HDL should ideally be <3.5. A widely publicized recent study seemed to call into question the importance of HDL, but what it was really pointing to, once again, was the correct particle size. If HDL particles are too small, they will not be able to exert the full protective power of the larger molecules.